

Work Order ID **54889**

Page 1

January 5, 2010 8:28:30 AM



Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item #

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer #

Reference:

Approvals: Process Plan: *PTC*

Date: *10/10/05* Tooling:

Date: \_\_\_\_\_

Run Start



QC:

Date: \_\_\_\_\_ SPC (Y/N):

Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
----------	--------------

*P* D2590

Rev. D

100



DC

Document Control

Memo

0.00

Photocopy bluefile & type labels per PPP D204-635-041  
CHG 002

*N/A HJ*

*PTC*

W/O: 54889

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
10-01-28	W/O awg header	Add awg header D 2590 Rev-D  perm change 7		10/05/05		10/01-28	10/01-28

Part No: D204-635-041 PAR #: Fault Category: SKL:clubes NCR:  Yes No DQA:  Date: 10/05/06  
 Resolution: re-work Disposition: rework QA: N/C Closed:  Date: 10/05/07

WORK ORDER NON-CONFORMANCE (NCR)								
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10-04-19	130	TOP - RING HOLE LARGER TAN RIDGE. GRINDING OF RIDGE AFTER BENDING NARROWED THE RIDGE	CP 10-04-19 DSI 042	WELD TOP & BOTTOM OF RIDGE, TO ADD MAT'L. IN FUTURE, LEAVE RIDGE AS-IS. REF DS EMAIL	BE 10/01/19	10/04/01	CP 10-04-19 per DSI 042	10/04/01
		QC process & material crushing is inconsistent.						

NOTE: Date &amp; initial all entries

**Work Order ID 54889**

January 5, 2010 8:28:30 AM



Page 2

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

110



Skidtubes

Memo

0.00

1- Inspect mat'l D2500-1-190 for damage

2-Cut D2500-1-190 per Dwg D2590 .Deburr ends

3-Drill pilot holes using drill jig DT 8149 &amp; DT8711-1&amp;-2

4-Acid etch and Alodine tube per QSI 005 4.1

5-Open holes to 0.500" as per Dwg D2590 without cutting fluid

6-Countersink holes as per Dwg D2590 without cutting fluid

7-Deburr and blow out all chips from inside of tube

8-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty  Part Number  Description  BatchA/R  U  Sikaflex-291

Sikaflex expire date: 2010/02

Start Time: 3:30AM

Fin Time: 8:45AM

MB  
10-01-06MB  
10-01-07

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**Work Order ID 54889**

Page 3

January 5, 2010 8:28:30 AM

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

120



0.00

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

Bend as per program D2590.C on CNC Bender

10-1-7

130



0.00

Skidtubes

Memo

0.00

10-1-7

Skidtubes

1-Cut tubes as per Dwg. D2590.

2-Deburr ends after cutting. Remove alodine from around holes

140



QC5- Inspect part completeness to step on W/O

0.00

QC

Memo

0.00

Quality Control

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

**Work Order ID 54889**

Page 4

January 5, 2010 8:28:30 AM

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req Qty: 1.00



Custom:

Reference:

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start
	QC:	Date:	SPC (Y/N):	Date:	Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

150



Skidtubes

Operation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

0.00

Memo 0.00

1-Prepare tube for welding D2576-3 Step Remove alodine as required.

8C 10/01/11

2-Weld step D2576 as per Dwg. D2590 and QSI 004  
A/R~~000~~ Aluminum Rod m112060

8C 10/01/11

3-Weld crossbolt spacers D2579 as per Dwg. D2590 and QSI 004. For  
D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass  
3/8" drillA/R~~000~~ Aluminum Rod m112060

8C 10/01/11

4-Grind welds as per Dwg D2590 Grind flush ridge made from bending

5-Drill holes for wearplates using DT 8218 & DT8937 Open holes to 19/64",  
adjust stopper not to hit web. Deburr6-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2590.  
Deburr holes

7-Drill pilot holes for aft cap using DT 8215 Open holes to #6 Drill bit. Deburr

8-Drill pilot holes for Towing using DT9425, open to .640" and Deburr  
\*\*\*\*verified dim. before drilling\*\*\*\*

AWM 10-01-12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**Work Order ID : 54889**

January 5, 2010 8:28:30 AM



Page 5

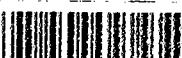
Item ID: D204-635-041

Accept



Setup

Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160

QC10- Inspect visual per QSI004- ground welds

0.00

S10/04/26

QC

Memo

0.00

Quality Control

170

QC5- Inspect part completeness to step on W/O

0.00

S10/04/21

QC

Memo

0.00

Quality Control

175

Pressure Wash and Reacidine tube as per  
QSI005 section 4.1.2.1 do not acid etch

Q

⑦ 6/10-4-26,

180

White Gloss(Ref.4.3.5.1) per QSI005 4.3-Alum

0.00

11/11/4207 =&gt; 10/04/27

Powdercoat

Memo

0.00

Powder Coating

START TIME: 7:15AM  
OVEN TEMPERATURE: 320°F  
FINISH TIME: 7:45AM

1 9

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**Work Order ID 54889**

January 5, 2010 8:28:30 AM



Page 6

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

190

Operation  
Description

QC3- Inspect Part Finish

Set Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

QC

Quality Control

Memo

0.00

=7 m h 10/04/27 (12)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**Work Order ID 54889**

Page 7

January 5, 2010 8:28:30 AM

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 15/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200		0.00							
HandFinish	Memo	0.00							
Hand Finishing	I-Install inserts & weaplates & gaskets using a drop of Sikaflex on insert holes before installing weaplates A/R 1.00 Sikaflex-291 <input checked="" type="checkbox"/> <u>M112429</u> Sikaflex expire date: <u>10/08</u>								
	2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580								
	3-Inspect for foreign object per QSI 024								
	4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive A/R 1.00 Sikaflex-291 <input checked="" type="checkbox"/> <u>M112429</u> Sikaflex expire date: <u>10/08</u>								
	5-Wing Walk as per Dwg D2590 and QSI 005 4.4 Batch: <u>M113545</u>								

m-k  
10/04/28

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**Work Order ID 54889**

January 5, 2010 8:28:30 AM



Page 8

Item ID: D204-635-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 05/01/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 18/01/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberReject  
NumberInsp.  
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00

S (01/01/28)



QC

Quality Control

Memo

0.00

PWP 54889

220

QC21- Final Inspection - Work Order Release

0.00

1/04/10/30



QC

Quality Control

Memo

0.00

10/05/04 JJ

BD 10-5-04 JJ

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

January 5, 2010 8:28:34 AM

Page 1

10

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pack	Qty Issued	Date Issued	Status
ALS7-1032-130		Purchased	No			180	Each	1,530.000	44.0000			

Insert

Warehouse Loc Qty Loc Code

Location

Main Warehouse

N1114407

ST

1530

105855

16

108606

52

111529

188

111779

313

112772

11

113238

950

31 X

m-h  
10/04/27

AN3-5A



Purchased

No

180

Each

1,975.000 2.0000



Bolt

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

1975

100188

188

105057

1787

2x m-h  
10/04/27

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

# Picklist Print

January 5, 2010 8:28:34 AM

Page 2

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Ex- Icon	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remain- ing Qty To Pick	Qty Issued	Date Issued	Status
AN3C4A		Purchased		No		180	Each	1,195.000	44.0000			

BOLT

	<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
	<u>Location</u>		
	Main Warehouse	114330	
	ST	1195	
	112314	13	
	112720	12	
	112724	3	
	112829	1	
	112991	2	
	113121	64	
	113226	586	
	113359	14	
	113422	500	

AN960C10L



Purchased

No

180

Each

416.0000 44.0000



washer

NAS1149C0332R

	<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
	<u>Location</u>		
	OFFSHORE		
	FG	100	
	103585	100	
	Main Warehouse		
	ST	316	
	112116	156	
	112612	160	

January 5, 2010 8:28:34 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

January 5, 2010 8:28:34 AM

Page 3

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Item Type	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty to Pick	Qty Issued	Date Issued	Status
AN960JD10L		Purchased		No		180	Each	4,915.000	2.0000			

Washer

~~AN960JD10L~~

Warehouse

Location

Main Warehouse

ST	4915
101291	16
104885	25
105793	236
109632	174
110985	4464

Loc Qty

Loc Code

~~AN960JD10L~~

2X

m-l  
10/04/27

D2594-1



Manufactured

No

180 Each 250.0000 10.0000



Plug, 205 Skidtube

Warehouse

Location

Main Warehouse

FP	122
54008	17
54643	105

Loc Qty

Loc Code

B 55002

10 X

m-l  
10/04/27

Main Warehouse

ST	128
42221	16
42807	92
43884	3
46435	2
51527	9
51757	6

January 5, 2010 8:28:34 AM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector	
			Initial Chief Eng	Action Description Chief Eng	Sign & Date				

NOTE: Date & initial all entries

Picklist Print

January 5, 2010 8:28:34 AM

Page 4

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	On Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2594-3		Manufactured	No			180	Each	362.0000	10.0000			

O-Ring, 205 Skidtube

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		

Main Warehouse

FP	27	
51613	27	

Main Warehouse

ST	335	
52562	335	

D2855

Manufactured No

180 Each 160.0000 1.0000

Cap

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		

Main Warehouse

FP6	160	
50513	1	
50770	1	
51539	42	
53791	116	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

January 5, 2010 8:28:34 AM

Page 5

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3564-11 		Manufactured	No 			180	Each	16.0000	1.0000 			

Wearshoe

Warehouse	Loc Qty	Loc Code
-----------	---------	----------

Location

Main Warehouse

FP19

B57259

14

52125

14

Main Warehouse

ST

2

45823

1

50112

1

D3564-13



Manufactured

No

180	Each	34.0000	1.0000 
-----	------	---------	------------

Wearshoe

Warehouse	Loc Qty	Loc Code
-----------	---------	----------

Location

Main Warehouse

FP17

B56533

22

51611

22

Main Warehouse

ST

12

45409

2

46495

10

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

**Picklist Print**

January 5, 2010 8:28:34 AM

Page 6

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3564-7 		Manufactured	No			180	Each	22.0000	1.0000 			

Wearshoe

WarehouseLocation

## Main Warehouse

ST	22
33803	✓
43229	5
46492	15
	2

Loc QtyLoc Code

10/04/27

1x m-l

D3564-9

Manufactured No

180 Each 13.0000 1.0000  

Wearshoe

WarehouseLocation

## Main Warehouse

FP19	11
53806	11

B 57260

1x m-l

10/04/27

## Main Warehouse

ST	2
44659	1
45825	1

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

## WORK ORDER NON-CONFORMANCE (NCR)

DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

# Picklist Print

January 5, 2010 8:28:34 AM

Page 7

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq If	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3566-1		Manufactured	No			180	Each	27.0000	2.0000			

Gasket

Warehouse      Loc Qty      Loc Code

Location

Main Warehouse

B 57257

FP

22

52512

3

54480

19

Main Warehouse

ST

5

46349

1

51218

1

51259

3

D3566-13

Manufactured

No

180

Each

94.0000 1.0000



Gasket

Warehouse      Loc Qty      Loc Code

Location

Main Warehouse

FP

92

51606

9

53461

83

Main Warehouse

ST

2

45717

1

50265

1

2x m-l  
10/04/27

1x m-l  
10/04/27

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Picklist Print

January 5, 2010 8:28:35 AM

Page 8

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Requirement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq II	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3566-7		Manufactured	No			180	Each	8.0000	1.0000			

Gasket

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

37354



8

8

110

Each

96.0000

1.0000

10/04/2010

18 m-h

D2500-1-190



Ext'n - I Beam Tube 4"

Warehouse Loc Qty Loc Code

Location

Main Warehouse

LG

52319

93

93



DJ

10-1-6

Main Warehouse

ST

46468

3

3

110

Each

0.0000

1.0000

B-55070 MB 10-01-06

D25977



204 Web

January 5, 2010 8:28:35 AM

Shop Packet Print

Page 8

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

## Worklist Print

Page 9

January 5, 2010 8:28:35 AM

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq III	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2576-3		Manufactured	No			150	Each	151.0000	1.0000			

Step (machining detail)

Warehouse	Loc Qty	Loc Code
-----------	---------	----------

Location

## Main Warehouse

ST	151	
43504	3	
46661	101	
52215	47	

26 10/01/11

January 5, 2010 8:28:35 AM

Shop Packet Print

Page 9

W/O:		WORK ORDER CHANGES				
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

## Checklist Print

Page 10

January 5, 2010 8:28:35 AM

Work Order ID: 54889



Parent Item: D204-635-041



Parent Item Name: Replacement Skidtube

Start Date: 05/01/2010

Required Date: 18/01/2010

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2579 		Manufactured	No			150	Each	381.0000	17.0000			

Crossbolt Spacer

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

## Main Warehouse

LG	259	
51525	4	
53780	3	
54543	38	
54642	214	

17 SE 10/01/11

## Main Warehouse

ST	122	
43988	4	
46434	4	
46956	2	
47797	9	
48272	2	
51314	71	
51315	30	

January 5, 2010 8:28:35 AM

Shop Packet Print

Page 10

W/O:		WORK ORDER CHANGES				
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

**DART**

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. D
		D2590	SHEET 1 OF 2
DATE		TITLE	SCALE
07.04.05		204 SKIDTUBE ASSEMBLY	NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.28	REDRAWN, INCLUDED DEO 9094/9097	
D	07.04.05	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124	

RELEASED  
07-06-28

QTY	Part Number	Description
-041		
X	D2590-041	SKIDTUBE ASSEMBLY
1	D2500-1-190	EXTRUSION
1	D2576-3	STEP
17	D2579	CROSS BOLT SPACER
10	D2594-1	PLUG
10	D2594-3	O-RING
1	D2597	204 WEB
1	D2855	AFT CAP
1	D3564-7	WEARSHOE
1	D3564-9	WEARSHOE
1	D3564-11	WEARSHOE
1	D3564-13	WEARSHOE
2	D3566-1	GASKET
1	D3566-7	GASKET
1	D3566-13	GASKET
44	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AEIS-1032-130	INSERT
44	AN3C4A	BOLT
2	AN3-5A	BOLT
44	AN960C10L	WASHER
2	AN960JD10L	WASHER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-204 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (44 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/242.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:  
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 51889

B710-1-05

Copyright © 1996 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr

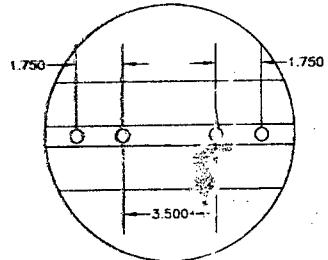
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

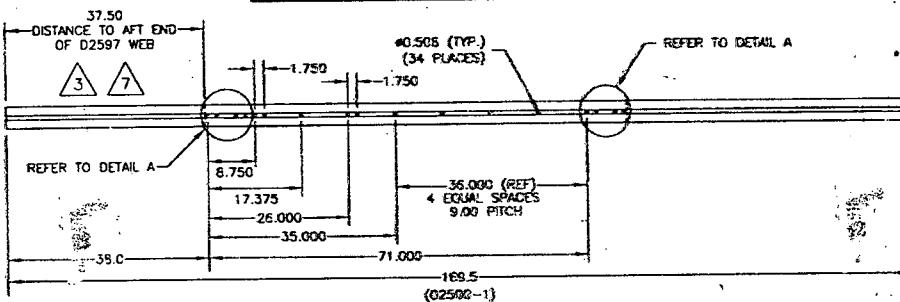
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

**DETAIL A**  
SCALE 5:24

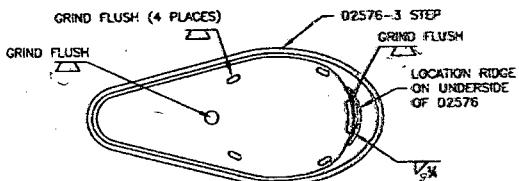


**D2590-1 DRILLING DETAIL**

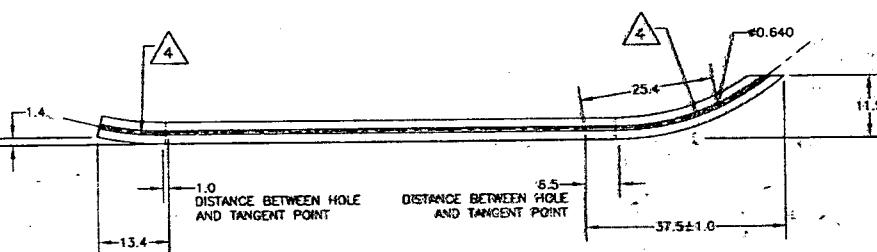


**RELEASED**  
02-06-28

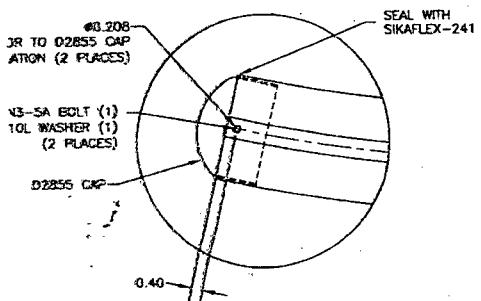
**DETAIL B**  
SCALE 5:24



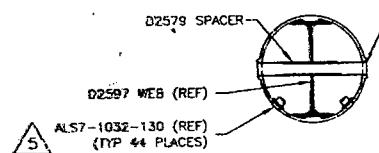
**D2590-1 BENDING AND CUTTING DETAIL**



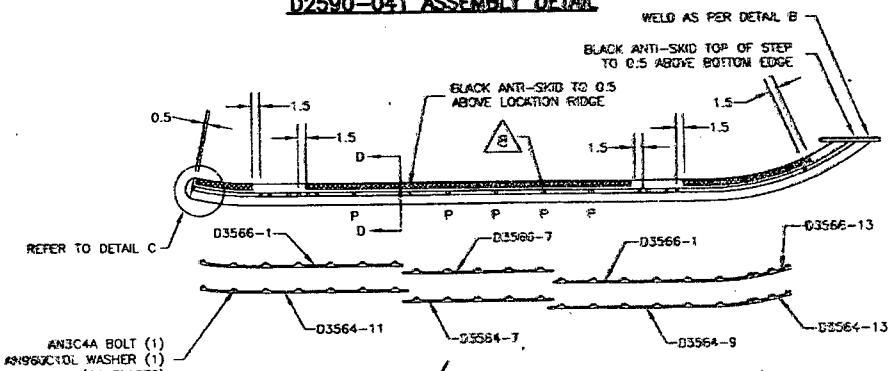
**DETAIL C**  
SCALE 5:24



**SECTION D-D**  
SCALE 5:24



**D2590-041 ASSEMBLY DETAIL**



w/o 54889

COPYRIGHT © 1996 BY DART AEROSPACE LTD.		DESIGN #	DRAWING #	DART AEROSPACE LTD. HAWKSBURY, ONTARIO, CANADA
CHECKED		APPROVED	DRAWING NO.	REV. D
			D2590	
DATE		TITLE		
07.04.05		204 SKIOTUBE ASSEMBLY		
SCALE: 1:24				

W/O:

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date &amp; initial all entries

## Chris Provencal

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** April 19, 2010 12:07 PM  
**To:** 'Chris Provencal'  
**Cc:** 'Mike Petsche'  
**Subject:** RE: NCR 204 Skid

My preference would have been to scrap the tube, but there is a lot of money into it at this point. So ... I asked Dan to install the tow ring ... As long as the tow ring installs OK, the tube should be OK. In the future, we should just leave the tube alone and let the hole overlap the ridge, like it does on 206 skidtubes. Hopefully, the softening around the tow ring hole from welding won't lead to problems in the field. But if there are problems, they won't be airworthiness problems ... just ground handling problems.

David

---

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** Monday, April 19, 2010 9:51 AM  
**To:** 'David Shepherd'  
**Cc:** 'Mike Petsche'  
**Subject:** RE: NCR 204 Skid

Dan said you looked at this last time you were here and had a different opinion. He's assembled the tow-ring on the tube and it looks OK. Can we sign this off?

-Chris

---

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** January 21, 2010 10:20 AM  
**To:** 'David Shepherd'  
**Subject:** NCR 204 Skid

David,

Qty(1) 204 Skidtube. There was lot's of damage on one skidtube ridge from bending. The material removed made the ridge too narrow for the tow-ring hole. The opposite side was fine (pic1).

I had them add weld to the top (mainly, where most of the material was removed) and bottom of the ridge. The result is that the hole now looks good, but there is a visible bulge to the line of the ridge. I suppose that more weld could be added to smooth the transition, but they wanted to limit the amount of weld added to prevent from making a complete mess. We weren't sure how well it would work or how much work would be involved in making it look OK.

I think it's acceptable because the weld is located away from the critical area of the skidtube, and we already weld the ridge in other locations (xbolt spacers). Although it doesn't look perfect, I think it looks much better than a hole spilling off the ridge. Powder coat should also improve the look as well.

-Chris

No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 8.5.437 / Virus Database: 271.1.1/2820 - Release Date: 04/19/10 06:31:00

NO. 227

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barday Elliott  
Job number: 56925  
Part number: D205-634-041  
Description: 205 skid tube  
Welding Process: Tig[] Mig[]  
Base materiel: Aluminum  
Current: AC[] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[] fail[]  
Penetration: pass[] fail[]

UNACCEPTABLE

Cracks: pass[] fail[]  
Undercut: pass[] fail[]  
Pin holes: pass[] fail[]  
Overlap (cold lap) pass[] fail[]  
Porosity (surface): pass[] fail[]  
Coloration: pass[] fail[]

Qualifier Barday Elliott Date of Test Coupon 03-19

Welder Barday Elliott Date of Test Coupon 03-19

The above named individual is qualified in accordance with AWS D17.1.2001 to weld